FLIGHT SAFETY FOUNDATION
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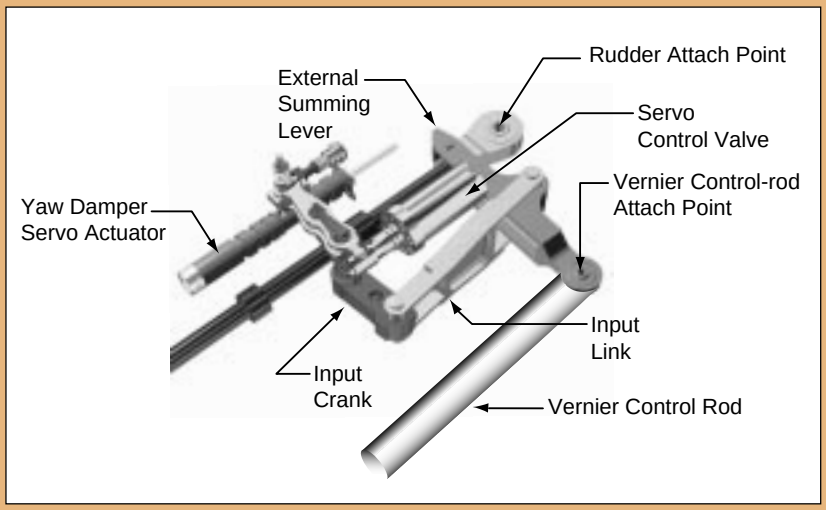
MARCH–APRIL 1997

FAA Proposes Airworthiness Directives for Modifying Boeing 737 Rudder Control Systems



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Aviation Mechanics Bulletin

Dedicated to the aviation mechanic whose knowledge, craftsmanship and integrity form the core of air safety.

Robert A. Feeler, editorial coordinator

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FAA Proposes Airworthiness Directives for Modifying Boeing 737 Rudder Control Systems

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FSF Editorial Staff

The U.S. Federal Aviation Administration (FAA) has proposed two airworthiness directives (ADs) that would require modifications to the rudder control system (Figure 1, page 2) of all operational Boeing 737 aircraft. Both proposed ADs are intended to reduce the risk of inadvertent rudder movements.

The period for comments on both proposed ADs closed April 23, 1997. The FAA is studying comments received. No date has been set for the adoption of the ADs.

The proposed ADs — issued as Notices of Proposed Rulemaking (NPRMs) — are one result of the close scrutiny that the FAA has given to the B-737 flight-control system following two fatal B-737 accidents. [USAir Flight 427 rolled suddenly and plunged into the ground near Pittsburgh, Pennsylvania, U.S. The Sept. 28, 1994, accident killed all 132 occupants of the airplane. An earlier B-737 accident occurred on March 3, 1991, at Colorado Springs, Colorado, U.S., to United Airlines Flight 585. That aircraft also experienced a sudden loss of control and struck the ground, killing its 25 occupants.]

The FAA said that the NPRMs did not represent any conclusions about the causes of the accidents, which remain unresolved.

The first NPRM, Docket No. 97-NM-28-AD, proposes an AD that would require installation of a rudder-limiting device and a new yaw damper system. The second NPRM,

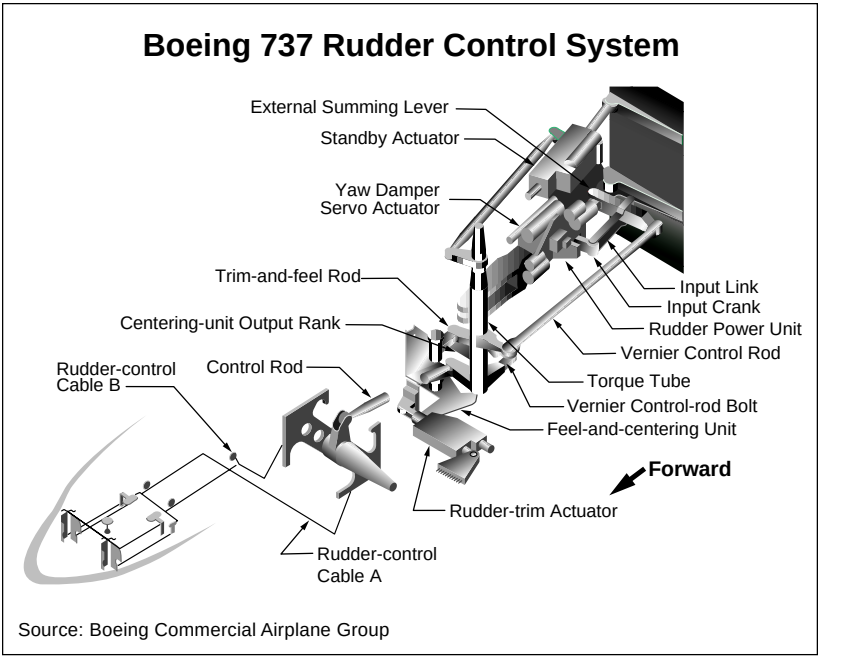


Figure 1

Docket No. 97-NM-29-AD, proposes an AD that would require replacement of the main rudder power control unit (PCU) and the fitting of redesigned bolts on the PCU vernier control rod. Both proposed ADs would apply to B-737-100 through -500 series aircraft.

The first NPRM, the FAA said, was "prompted by a report indicating that a full rudder input, either commanded or uncommanded, could result in a rapid roll upset; and by reports of malfunctions of the yaw damper system."[1] The yaw damper system automatically makes small adjustments to the rudder angle to keep the airplane aligned with the direction of travel.

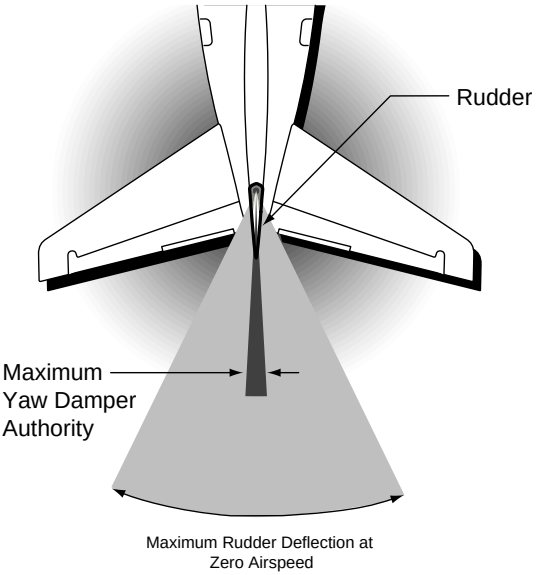
The FAA said that the proposed AD was "intended to prevent excessive rudder authority and consequent reduced controllability of the airplane; and malfunctions of the yaw damper system, which could result in sudden uncommanded yawing of the airplane and consequent injury to passengers and crew members."

The FAA said that in the U.S. National Transportation Safety Board (NTSB) investigation of the Pittsburgh accident, the NTSB received

evidence based on computer simulations that a full rudder input on the B-737 could result in a rapid roll upset consistent with the aircraft movement recorded on the flight data recorder of the accident airplane.

The rudder (Figure 2) is designed so that the degree of possible rudder deflection decreases as airspeed increases. Nevertheless, "... during certain combinations of flap settings and airspeeds," the FAA said, "the amount of rudder deflection available is greater than needed for control of the airplane. A full rudder deflection (hardover) with such excessive rudder authority can result in a rolling moment due to sideslip that exceeds the maximum rolling moment available by control-wheel inputs." [The FAA issued AD 96-26-07 on Jan. 2, 1997, requires revisions to the FAA-approved airplane flight manual, adding procedures for flight crews to control the airplane during an uncommanded yaw or roll, and to correct a jammed or restricted flight-control condition.

Boeing 737 Rudder Deflection and Yaw Damper Limits



Source: Boeing Commercial Airplane Group

Figure 2

[In case of an uncommanded yaw or roll, the AD directs the pilots to maintain control with all available flight controls; if the roll is uncontrollable, to immediately reduce angle of attack and increase airspeed; and to disconnect the autopilot and autothrottle if they are engaged.

[In case of a jammed or restricted rudder, the AD directs disconnection of the autopilot and autothrottle if they are engaged, and use of maximum force with a combined effort by both pilots to overpower the improper rudder configuration. The AD also offers a "decision tree" including various alternative paths to clearing the jam and any associated rudder deflection, as well as landing instructions for various scenarios.]

The FAA said that it has also received reports of malfunctions of the yaw damper system, which "may have been caused by failure of the rate gyroscope of the yaw damper coupler as a result of wear of the rotor bearing, and contamination and shorting of the electrical connectors or surface-position sensors in the area of the yaw damper servo actuator."

Boeing has designed a rudder-limiting device and a new yaw damper for the latest B-737 models undergoing certification, the FAA said, adding that these systems are capable of being installed on the current B-737 fleet. The rudder-limiting device, known as a hydraulic-pressure reducer, is designed to give the pilots more control-wheel authority over rudder movements when the airplane is at altitude. Boeing has not yet released a service bulletin about such retrofitting, the FAA said.

"Installation of a rudder-limiting device is necessary to reduce the rudder authority at altitudes above 1,500 feet [458 meters] above ground level (AGL) so that, if any inadvertent hardover occurs, the resultant roll upset can be controlled with control-wheel inputs," the FAA said. "Installation of a new yaw damper system is necessary to improve the reliability of the system and its fault-monitoring capability, which will prevent uncommanded yawing of the airplane."

The proposed AD would require B-737 operators to accomplish the following within three years after the AD's effective date:

> "(1) Install a newly designed rudder-limiting device that reduces the rudder authority at altitudes above 1,500 feet AGL; [and]
>
> "(2) Install a newly designed yaw damper system that improves the reliability and fault-monitoring capability."

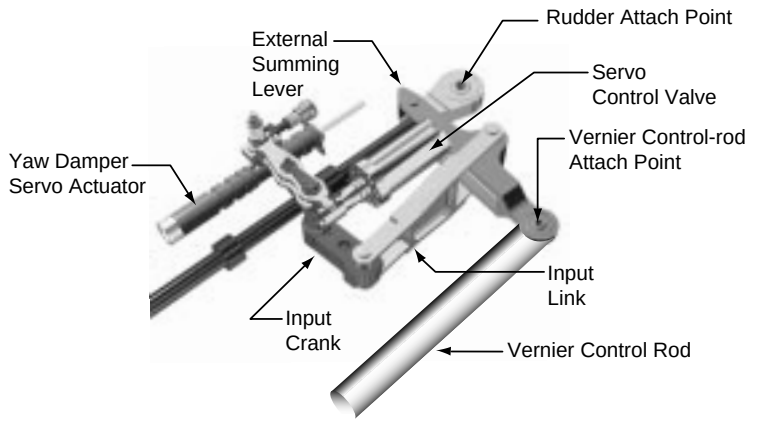
The manager of the FAA Seattle Aircraft Certification Office (ACO)

would have the authority to approve an operator's request for an alternative method of compliance or an adjustment to the compliance time.

The second NPRM proposes an AD that would supersede two existing ADs that provide for testing of PCUs.[2] On Jan. 3, 1994, the FAA issued AD 94-01-07, applicable to certain B-737 series airplanes, which required periodic tests of the main rudder PCU to detect excessive internal leakage of hydraulic fluid, stalling [of the PCU, making it incapable of activation] or reversal [of rudder deflection, turning the rudder in the direction opposite to what was commanded], and eventual replacement of the PCU with an improved model. AD 94-01-07 resulted from an investigation, the FAA said, that disclosed "a remote possibility that the secondary slide in the servo valve of certain PCUs could go past the maximum-travel position." (The servo valve contains two slides, one inside the other. The primary slide is the inner one.) That AD was intended to "prevent secondary slide overtravel from occurring, which could cause the rudder to operate with reduced force capability or to move in a direction opposite to the intended direction ... ."

On Nov. 7, 1996, the FAA issued AD 96-23-51, applicable to all B-737 series airplanes, to require periodic tests to verify the proper operation of the main rudder PCU (Figure 3), and replacement of the

Boeing 737 Power Control Unit (PCU), Main Rudder Linkages



Source: Boeing Commercial Airplane Group

Figure 3

PCU with a new unit if necessary. "Tests of the PCU conducted by the manufacturer ... demonstrated another very remote potential failure scenario that was previously unknown," the FAA said. That scenario involved rudder-pedal input causing deformation in the linkage leading to the primary and secondary slides of the servo control valve of the main rudder PCU. Under such a condition, a rudder-pedal command could also result in rudder travel in the wrong direction. The FAA described AD 96-23-51 as "an interim action."

Although AD 94-01-07 and AD 96-23-51 would be superseded by the AD proposed by the second NPRM, the provisions for testing the main rudder PCU for internal leakage and replacement of the PCU, if necessary, have been carried over into the proposed AD. But after AD 96-23-51 was issued, Boeing advised the FAA that it is designing a new version of the main rudder PCU, the second NPRM said. The new PCU, similar to the PCU for the not-yet-certificated B-737-700, will have an improved servo control valve that is believed to eliminate the possibility of uncommanded or reversed rudder motion.

The new PCU has not yet undergone the extensive testing and analysis needed for FAA certification, and therefore no new Boeing service bulletin has been issued for it, the NPRM said. Nevertheless, it added, "the FAA anticipates that these tests and analyses will be completed and the service bulletin approved prior to issuance of a final rule [that is, of the new AD]."

Besides requiring replacement of the PCU with a newly designed unit, the proposed AD would require replacement of the vernier control-rod bolt with a newly designed bolt. (The vernier control-rod bolt links the torque tube to the vernier control rod.) The NPRM said that the FAA had received two reports of fractured vernier control-rod bolts. "Fracturing of the outer bolt was caused by the shank of the bolt running into the threads of the nutplate during installation of the vernier control rod," the NPRM said. "These bolts have a dual load path. If the second load path of the bolt fractures, the manual input link to the main rudder PCU would be disconnected. Such fracturing, if not corrected, could result in uncommanded movements of the rudder, and consequent reduced controllability of the airplane. ...

"Installation of the new bolt will eliminate the possibility of the shank of the bolt running into the threads on the nutplate."

After restating the applicable requirements of AD 94-01-07 and AD 96-23-51, the NPRM describes the

new requirements of the proposed AD:

"(d) Within two years after the effective date of this AD, accomplish paragraphs (d)(1) and (d)(2) of this AD in accordance with a method approved by the manager, Seattle [ACO] ... . Accomplishment of these actions terminates the requirements of paragraphs (a), (b) and (c) [the carried-over provisions for PCU testing and replacement if necessary].

"(1) Replace any main rudder PCU having Boeing part number (P/N) 65-44861-( ) or P/N 65C37052-( ) with a new main rudder PCU that has been approved by the manager, Seattle ACO.

"(2) Replace the vernier control-rod bolt having Boeing P/N 69-27229-( ) with a new bolt that has been approved by the manager, Seattle ACO.

"(e) Perform a leak test of the main rudder PCU in accordance with a method approved by the manager, Seattle ACO, at the applicable times specified in paragraph (e)(1) or (e)(2) of this AD. If any discrepancy is found, prior to further flight, replace the PCU with a serviceable or newly designed unit ... .

"If the PCU is replaced in accordance with the requirements of paragraph (e) prior to accomplishing the replacement required by paragraph (d) of this AD, 'serviceable' includes the newly designed PCU referenced in paragraph (d)(1) of this AD and PCUs having [P/N] 65-44861-11 and 65C37052-2, -3, -4, -5, -6, -7, -8 and -9. However, after the PCU has been replaced in accordance with paragraph (d)(1) of this AD, 'serviceable' is limited to the newly designed PCUs referenced in that paragraph.

"(1) For airplanes in which the replacement specified in [the carry-over provisions] has been accomplished prior to the effective date of this AD: within 4,000 flight hours after the effective date of this AD, and thereafter at intervals not to exceed 6,000 flight hours.

"(2) For airplanes other than those identified in paragraph (e)(1) of this AD: within 6,000 flight hours after accomplishment of the replacement required by paragraph (d)(1) of this AD, and thereafter at intervals not to exceed 6,000 flight hours.

"(f) Once a newly designed PCU specified in paragraph (d)(1) of this AD is installed on an airplane, no operator shall install on that airplane any PCU other than a newly designed unit."

The manager of the Seattle ACO would have the authority to approve an operator's request for an alternative method of compliance or an adjustment to the compliance time.♦

References

1. *Federal Register* Volume 62 (March 14, 1997): 12121–12123. This reference includes the full text of the proposed AD as well as supplementary and background information.
2. *Ibid.*, 12126–12129. This reference includes the full text of the proposed AD as well as supplementary and background information.

NEWS & TIPS

Aircraft Maintenance & Reliability Seminar And Workshop Features MSG-3 Analysis Method Courses

The MSG-3 analysis process, used to develop and maintain modern, cost-effective maintenance programs, will be examined from various aspects in the Aircraft Maintenance & Reliability Seminar and Workshop, July 15–18, 1997, in Orlando, Florida, U.S.

The seminar and workshop, which will take place at the Adam's Mark Hotel, will include sessions on the following subjects, among others:

- Failure and reliability fundamental factors;
- Organization of maintenance review board;
- Application of MSG-3 analysis techniques;
- Development of a reliability program;
- Reliability-centered maintenance; and,
- Aging aircraft.

For more information, contact: Transportation Systems Consulting Corp., 35111 U.S. 19 North, Suite 101, Palm Harbor, FL 34684 U.S. Telephone: (813) 785-0583; Fax: (813) 789-1143.

ARSA Symposium Examines Inspection for "Unapproved" Parts

The Aeronautical Repair Station Association (ARSA) will hold its Annual Repair Symposium June 6–8, 1997, in Arlington, Virginia, U.S.

The venue will be the Hyatt Regency Crystal City, adjacent to Washington National Airport.

The symposium will feature a panel discussion of U.S. Federal Aviation Administration Flight Standards *Handbook Bulletin for Airworthiness* (*HBAW*) 96-05B (requiring air carriers to have their "substantial maintenance" contractors listed on their operations specifications) and *HBAW* 96-08 (requiring certificate holders to have an inspection system for incoming parts to segregate "unapproved" inventory).

Among the other presentations will be a yearly review of the maintenance recordkeeping requirements of the U.S. Federal Aviation Regulations and a review of the certification basis for repair-station rating.

For more information, contact: Aeronautical Repair Station Association, 121 North Henry Street, Alexandria, VA 22314 U.S. Telephone: (703) 739-9543; Fax: (703) 739-9488.

AEA Schedules European Meeting

The Aircraft Electronics Association (AEA) 11th Annual European Regional Meeting will take place May 30–31, 1997, at the Radisson SAS Hotel in Hamburg, Germany.

The meeting will include sessions about:

- Surface-mount technology rework on printed wiring assemblies;
- Free-flight navigation;
- Joint Airworthiness Authorities and U.S. Federal Aviation Administration issues and regulations; and,
- Enhanced ground-proximity warning systems.

For more information, contact: the Aircraft Electronics Association, 4217 South Hocker, P.O. Box 1963, Independence, MO 64055 U.S. Telephone: (816) 373-6565; Fax: (816) 478-3100. In Europe, contact: Hans Apfel, AEA regional vice president, Nürnberg, Germany. Telephone: (49) 911-9356-350.

Thermal Solutions '97 Highlights Infrared Thermography

The American Society for Nondestructive Testing (ASNT) will sponsor a topical conference on infrared thermography (IRT), June 24–26, 1997, at the Marriott Downtown at Key Center, Cleveland, Ohio, U.S.

The conference, Thermal Solutions '97, will feature the presentation of

24 papers about using thermal tools for nondestructive testing (NDT). Following the conference, ASNT will present a posttopical seminar June 27, Establishing and Maintaining a Successful Program for IRT Inspections.

For more information, contact: the American Society for Nondestructive Testing, 1711 Arlingate Lane, P.O. Box 28518, Columbus, OH 43228-0518 U.S. Telephone: (800) 222-2768 (United States and Canada); (614) 274-6003; Fax: (614) 274-6899.♦

MAINTENANCE ALERTS

Wind Blows Falcon 900 Cowling into Jet Blast

During a run of the no. 1 (left) and no. 2 (center) engines on a Dassault-Mystère Falcon 900 under gusty prevailing wind conditions, the unsecured cowling of the no. 2 engine disengaged and was blown behind the aircraft, where it was destroyed.

The Falcon was being tested for faults in both engines and for oil-pump leaks in the no. 2 engine. Because two engines must be operating to operate the hydraulic systems, the maintenance crew chose to run both the no. 1 and no. 2 engines. Although a rigid brace was available to secure the open no. 2 engine cowling, the brace would have positioned the cowling in the no. 1 engine jet blast, and so the brace was not used.

While a technician examined the no. 2 engine oil leak, a gust of wind blew the cowling into the no. 1 engine jet blast.

Investigators recommended that a redundant method of securing the no. 2 engine cowling be used and that securing of the no. 2 engine cowling during engine runs be made mandatory. It also reminded personnel of "the need for forethought at all times, regardless of how safe a situation may appear."

Missing Rivets Result In Nonfunctioning Elevator-trim Torque Tube

The pilot of a Gulfstream IV turbojet reported that, during cruise flight, the elevator trim went to the full nose-up position and could not be controlled manually. Following a safe landing, an investigation showed that two rivets were missing from the elevator-trim torque-tube assembly (part number 43083-818-2), where the assembly should have been attached to the lower universal-drive adapter.

The shaft was therefore able to turn inside the torque-tube assembly, but

the elevator cable drum was not driven. There was no evidence that the rivets had been installed.

AD Requires Cessna Operators to Check Hoses

U.S. Federal Aviation Administration (FAA) Airworthiness Directive (AD) 97-01-13 requires a check to make sure that a faulty hose has not been installed in Cessna piston-engine models 150 to 421 and the turbine-engine Caravan and 425 Conquest models.

The AD requires a maintenance-records check of the aircraft, which may be performed by an owner or operator with at least a private-pilot certificate, within 60 hours time in service. The check is to determine whether any hose (part number S51-10) was installed after March 1995. The hose can be used for a fuel, oil or hydraulic line.

If a hose with that part number is installed, the qualified owner or operator must inspect it to determine whether the hose has a spiral or diagonal external reinforcement wrapping. If the hose is spiral-wrapped, a certificated mechanic must replace it with a hose having a criss-cross or cross-hatch braid before the aircraft is returned to service.

The AD resulted from reports of hose deterioration and fuel-flow blockage in some Caravans. The defective hose was factory-installed in Caravans and was distributed as replacement hose for field installation.

Spar-cap Corrosion Discovered on Cessna 550

While a twin-turbofan Cessna 550 Citation II wing-skin panel was removed from the right wing, just aft of the landing-gear well, severe corrosion was found on the lower aft wing-spar cap. The corroded area extended from the wing root to about wing station 74.5.

The corrosion was removed, in accordance with a Cessna engineering approval. It was then revealed that between 10 percent and 20 percent of the spar-cap thickness had been consumed. A check of the equivalent area on the left wing revealed no corrosion.

The lower aft wing-spar areas should be checked for corrosion during scheduled inspections and maintenance.♦

Lightweight Chocks Feature Antislip Base

A line of lightweight chocks, molded from impact-absorbing urethane, has been introduced by Checkers Industrial Products Inc.

The chocks, which are designed for business, commercial, cargo and military aircraft, are said by the manufacturer to offer a number of advantages over other types, particularly those made of wood:

- Highly visible color;
- Resistance to ultraviolet light, chemicals, oil and fuel;
- Light weight, capable of being carried aboard the aircraft;
- Replaceable nylon rope lanyard;
- Antislip traction base; and,
- Resistance to rotting or splintering.

Checkers chocks are available in the Flight Line series, which is an updated version of the traditional wooden chock design, and in the 200 series, which features a design that is contoured to the tire curvature, to absorb wheel squat that might occur during loading and fueling.

For more information, contact: Checkers Industrial Products Inc., 2888 Bluff St., Suite 129, Boulder, CO 80301-9002 U.S. Telephone: (800) 438-9336 (United States and Canada); (303) 438-9402; Fax: (303) 438-9404.

Ultrasonic Flaw Detector Features Memory and Comparison Functions

Krautkramer Branson has introduced a large-screen ultrasonic flaw detector with special features designed to optimize its utility in aerospace applications.

The new model, USD 15S/AF, includes a square-wave pulser; data logger that stores as many as 1,200 thickness readings; high-low limit-thickness monitor that provides "go/no-go" thickness gauging; and an A-scan comparison function for displaying stored and active A-scans simultaneously.

The USD 15S/AF weighs 8.6 kilograms (19 pounds) without batteries, 12.7 kilograms (28 pounds) with an eight-hour battery. The unit features a bright, high-contrast electroluminescent display screen.

For more information, contact: Krautkramer Branson, 50 Industrial Park Road, Lewistown, PA 17044

U.S. Telephone: (717) 242-0327; Fax: (717) 242-2606.

New Products Aim to Prevent Injury from Repetitive Motion

Damage to the hands and wrists from repetitive motion, including carpal tunnel syndrome, accounts for a large percentage of workplace injuries and worker's compensation claims. But several new or redesigned products recently entering the market are designed to reduce the likelihood of this type of injury.

Ergodyne has added a patented open-center stay to its line of ProFlex® wrist supports. [The stay is the part of the wrist support that limits downward wrist movement to maintain a more neutral, and therefore less stressful, position during repetitive work.] The opening in the stay is said to put less pressure on the median nerve, and therefore to further reduce the likelihood of carpal tunnel syndrome.

The ProFlex line includes the 4000/4010 series for heavy duty and the 4020 series featuring lightweight, compact design.

For more information, contact: Ergodyne, 1410 Energy Park Drive, Suite One, St. Paul, MN 55108 U.S. Telephone: (800) 225-8238 (United States and Canada); (612) 642-9889; (Fax): (612) 642-1882.

Simonds Ergonomic Air-Powered Hand Tools

A new conduit and plastic tubing cutter that can eliminate repetitive manual-pressure squeezing operations are available from Simonds Inc.

Ergonomic Air-Powered Hand Tools are powered by compressed air, actuated by a thumb trigger, and can be equipped with a variety of jaw sets to perform cutting, crimping, trimming, punching, notching or insertion. The new Model A4 Conduit Cutter shears conduits and extruded plastics up to 0.16 centimeter (0.06 inch) outside diameter at rates as much as 60 strokes per minute.

For more information, contact: Simonds Inc., 248 Elm Street, P.O. Box 100, Southbridge, MA 01550.

Telephone: (508) 764-3235; Fax: (508) 765-5125.

Database Software Tracks Parts, Equipment

A database system named Brady*TRAXX*™ for tracking, storing and managing information about inventory, assets, tools and supplies has been introduced by Brady USA Inc. Among the software packages for specific applications are StockRoom Manager, Inventory Manager and Asset Manager.

StockRoom Manager is designed for tracking items in stock and supply rooms and for monitoring maintenance parts. Inventory Manager is said to enable management of an unlimited number of inventory items, instant location of stock, tracking of cycles and expiration times and producing history logs for audit trails. Asset Manager is designed for tracking a large variety of components.

BradyTRAXX™ inventory software

The software can be used to print barcode labels to identify items and their locations. A scanner reads the barcoded information and updates files.

Brady*TRAXX* software is compatible with Windows™ 3.1, Windows 95, Windows for Workgroups or Windows NT.

For more information, contact: Brady USA Inc., P.O. Box 3064, Cedar Rapids, IA 52406 U.S. Telephone: (800) 216-8396 (United States and Canada); (319) 395-9777; Fax: (319) 395-9719.

Pressure Transducer Withstands High-temperature, High-vibration Environments

Endevco Corp. now offers the Model 8541 high-temperature absolute pressure transducer, designed for both static and dynamic pressure measurements. The manufacturer says that the Model 8541's small diameter and exceptional high-temperature tolerance make it suitable for flush mounting in gas turbine engines and for measuring skin pressures on aircraft.

The Model 8541 offers continuous high-temperature performance to 350 degrees C (662 degree F) and operation with diminished lifetime to 400

Endevco Model 8541 pressure transducer

degrees C (750 degrees F) — said to be the highest temperature capability available. A proprietary cable attachment design helps the unit withstand high-temperature, high-vibration environments.

For more information, contact: Endevco Corp., 30700 Rancho Viejo Road, San Juan Capistrano, CA 92675 U.S. Telephone: (800) 982-6732 (United States and Canada); (714) 493-8181; Fax: (714) 661-7231.

Analytical Ferrograph Measures Wear Particles in Used Lubricants and Fuels

Spectro Inc. has developed a new analytical ferrograph to diagnose contaminants and wear particles in used lubricating oils, hydraulic fluids, greases, coolants and fuels.

Model T²FM, whose designation stands for Thistle Tube Ferrogram Maker, incorporates a thistle tube that provides a constant sample flow onto a glass substrate. A ferrogram is produced that enables particle size, surface characteristics and composition to be determined, giving indications of wear modes in the mechanical source.

The manufacturer says that the unit:

- Is sensitive to wear particles ranging from one micrometer to 800 micrometers in the largest dimension;
- Can segregate particles by size, spreading the particles out in a characteristic deposition pattern. Microscopic examination of these ferrograms is said to indicate mechanical problems that other techniques cannot detect;
- Makes possible the identification of various alloys of wear particles, ferrous and nonferrous; and,
- Characterizes various modes of wear, and isolates and identifies a faulty component.

For more information, contact: Spectro Inc., 160 Ayer Road, Littleton, MA 01460 U.S. Telephone: (508) 486-0123; Fax: (508) 486-0030.

Troubleshooting System Uses "Case-based Reasoning" to Simplify Problem Diagnosis

A computer-based program, said to imitate the way people use deductive reasoning to relate past experiences to current problem solving, has been developed as a diagnostic tool and efficiency maximizer for maintenance applications.

SpotLight, a product of Atlantis Aerospace Corp., uses a database called a "case base" and search software. Previously solved problems (cases) are stored, including complex combinations of symptoms. The user points and clicks on a computer interface to indicate the characteristics of a current problem. SpotLight asks questions that enable further differentiation among stored cases, and then presents cases in its memory that offer the best fit with the current situation.

SpotLight does not eliminate the need for human technical expertise, the manufacturer says, but it does offer the expert a computerized memory bank that can offer time-saving clues. The system is said to be particularly valuable in resolving elusive problems such as intermittent faults and multiple-fault combinations.

SpotLight eliminates "reinventing the wheel" because once a problem has been solved and documented in the case base, the information will quickly be found by a search if the same symptoms recur, possibly providing a short-cut to the answer.

For more information, contact: Atlantis Aerospace Corp., 1 Kenview Boulevard, Brampton, Ontario, Canada L6T 5E6. Telephone: (905) 792-1981; Fax (905) 792-7251.♦

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Disaster Response Planning Workshop for Business Aviation

June 5–6, 1997
Atlanta Airport Hilton and Towers
Atlanta, Georgia, U.S.

Who Should Attend?

- Department managers (flight, maintenance, scheduling and administration);
- Flight safety managers;
- Corporate safety/disaster response managers;
- Corporate security managers;
- Human resource/personnel managers;
- Public relations/communications managers;
- Risk/insurance and financial managers; and,
- Administrative managers.

Why Should You Attend?

- Develop your own disaster response plan—now!;
- Update your current disaster response plan (at least every other year);
- Increase the number of people in your department with skills and expertise in disaster response (one or two aren't enough);
- Improve corporate managers' understanding of the unique issues involved in an aviation-related disaster (you'll want all the help you can get); and,
- Help your department's staff after a nonaviation disaster (automobile accident, fire or act of violence).

For more information, contact: Steve Jones, Flight Safety Foundation
Telephone: (703) 739-6700 • Fax: (703) 739-6708

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Visit our World Wide Web site at: http://www.flightsafety.org